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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 10/025,797 | 12/26/2001 | Seong Rag Kim | P67436US0 | 8009 |
| 43569 | 7590 | 10/12/2005 | EXAMINER | |
| MAYER, BROWN, ROWE & MAW LLP 1909 K STREET, N.W. WASHINGTON, DC 20006 | | | BAYARD, EMMANUEL | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2638 | |

DATE MAILED: 10/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/025,797 | KIM ET AL. | |
| | Examiner | Art Unit | |
| | Emmanuel Bayard | 2638 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 13-20 is/are rejected.
- 7) ☒ Claim(s) 2-12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This is in response to amendment filed on 7/26/05 in which claims 1-20 are pending. The applicant's arguments have been fully considered but they are moot based on the new ground of rejection.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 17-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 recites the limitation "the pilot symbol" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 18 recites the limitation "the selecting means" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Double Patenting

3. Claim 1 of this application conflict with claim 6 of Application No. 10/334,634. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

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4. Claim 1 provisionally rejected under the judicially created doctrine of double patenting over claim 6 of copending Application No. 10/334,634. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows: rake receiver or CDMA receiver.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Horng et al U.S. Patent No 6,839,379 in view of Sawahashi et al U.S. patent No 5,694,388.

As per claims 13 and 20, Horng et al teaches adaptive RAKE receiving (see figs.1, 2) method using at least one constraint in a mobile communication system, the method comprising the steps of: (a) setting initial coefficients of adaptive filters (see fig. 3 element 310 and col.3, lines 34-40) for multi-path components; (b) providing each of the adaptive filters with a corresponding multi-path component of a user to perform complex (see figs. 1, 3 elements 104, 301 and col.3, lines 32-33) signal filtering; (c) deciding (see col.2, lines 64-67 and col.3, lines 61-67) a channel estimation value for the multi-path component; (d) generating a reference signal (see figs.1, 3 element 105 and col.3, lines 45-47) by determining a transmitted data; (e) calculating an error between the reference signal and the filtered received signal (see fig.3 element 330 and col.3, lines 38-42); updating the coefficient of the adaptive filters based on a constraint LMS criterion (see col.3, lines 35-36).

However Horng et al does not explicitly teach updating the coefficient of the adaptive filters based on a constraint MMSE criterion.

Sawahashi et al teaches updating the coefficient of the adaptive filters (see figs. 2, 11 elements 3, 103 and col.2, lines 6-8) based on a constraint MMSE criterion (see figs. 2, 11 elements 14, 110 and col.25, lines 48-63).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Sawahashi into Horng as to accurately detect the known pattern of the pilot symbol signal.

As per claim 14, Horng does teach (g) gathering each of the multi-path components corresponding to the transmitted signature to provide them to each of the

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adaptive filters; and (h) filtering the complex received signal by using the input of the adaptive filter and the coefficient of the adaptive filter (see figs. 1-3 and col.3, lines 30-67).

As per claim 15, Horng does teach compensating (see fig.4 element 500 and col.4, lines 43-65) transmission delays of the multi-path components and gathering the compensated received signals to provide them to each of the adaptive filters.

As per claim 16, Horng and Sawahashi would teach gathering the received signal corresponding to period from a starting chip of a transmitted symbol of the firstly received multi-path component among the multi-path components to a final chip of the transmitted symbol of a last received multi-path component among the multi-path components to provide the gathered signals to each of the adaptive filters as to accurately detect the known pattern of the pilot symbol signal.

As per claim 17, Horng and Sawahashi would teach estimating the channel for each of the multi-path components by using the pilot symbol; and (k) multiplying the complex conjugate value of each of the estimated channel value with the output of the adaptive filter for the corresponding multi-path component, and summing up the multiplied values for all of the multi-path components to decide channel estimation value for the transmitted signal as to accurately detect the known pattern of the pilot symbol signal.

As per claim 18, Horng teaches estimating the channel by maximum likelihood combination by using the outputs of the adaptive filters (see fig.1 element 110 and col.3, lines 65-67) for all the multi-path components and the output of the selecting means

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(see col.4, lines 17-20).

As per claim 19, Horng teaches deciding a transmitted data; and (n) generating a reference signal by using the decided data and the channel value (see figs. 1, 3 element 105 and col.3, lines 45-65).

Allowable Subject Matter

3. Claims 2-12 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Baum U.S. Patent No 5,276,707 teaches a method for optimizing an adaptive filter.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 571 272 3016. The examiner can normally be reached on Monday-Friday (7:Am-4:30PM)
Alternate Friday off.

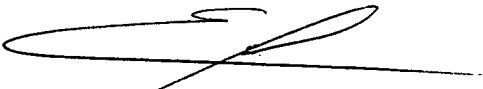
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vanderpuye Kenneth can be reached on 571 272 3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Emmanuel Bayard
Primary Examiner
Art Unit 2638

10/5/05


EMMANUEL BAYARD
PRIMARY EXAMINER